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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/858,251	05/15/2001	Kemal Guler	10014416-1	3054

7590 07/06/2009
HEWLETT-PACKARD COMPANY
Intellectual Property Administration
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Fort Collins, CO 80528-9599

EXAMINER

CHENCINSKI, SIEGFRIED E

ART UNIT	PAPER NUMBER
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3695

MAIL DATE	DELIVERY MODE
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07/06/2009

PAPER

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte KEMAL GULER, LESLIE R. FINE, KAY-YUT CHEN, ALAN H.
KARP, TONGWEI LIU, HSIU-KHUERN TANG, FEREYDOON SAFAI,
REN WU, and ALEX ZHANG

Appeal 2009-000415
Application 09/858,251
Technology Center 3600

Decided:¹ July 6, 2009

Before HUBERT C. LORIN, ANTON W. FETTING, and
BIBHU R. MOHANTY, *Administrative Patent Judges*.

MOHANTY, *Administrative Patent Judge*.

DECISION ON APPEAL

¹ The two-month time period for filing an appeal or commencing a civil action, as recited in 37 C.F.R. § 1.304, begins to run from the decided date shown on this page of the decision. The time period does not run from the Mail Date (paper delivery) or Notification Date (electronic delivery).

STATEMENT OF THE CASE

The Appellants seek our review under 35 U.S.C. § 134 of the final rejection of claims 1-23 which are all the claims pending in the application. We have jurisdiction under 35 U.S.C. § 6(b) (2002).

SUMMARY OF THE DECISION

We REVERSE.

THE INVENTION

The Appellants' claimed invention is directed to provide automated decision support for designing auctions (Spec. 4:3-4). The system includes a structure extractor using historical auctions for similar items, a bidding behavior predictor based on estimated unknown elements of the auction, and an optimizer (Spec. 4:10-21). Claim 1, reproduced below, is representative of the subject matter of appeal.

1. A computer-implemented automated decision support system for designing an auction for a given item, comprising:
 - a structure extractor that estimates unknown elements of market structure of the auction based on auction characteristics data extracted from historical auctions for similar items and a bidding model matching the extracted auction characteristics data;
 - a bidding behavior predictor that predicts bidding behaviors of bidders in the auction based on the estimated unknown elements of market structure and characteristics of the auction;
 - an optimizer that employs an evaluation criterion to generate an evaluation of the auction based on (1) the estimated unknown elements of market structure and (2) the predicted bidding behavior of bidders.

THE REJECTIONS

The Examiner relies upon the following as evidence in support of the rejections:

Lupien	US 5,101,353	Mar. 31, 1992
Shoham	US 6,285,989 B1	Sep. 4, 2001
Phillips	US 6,792,399 B1	Sep. 14, 2004
Szabo	US 6,868,525 B1	Mar. 15, 2005
Seymour	US 6,871,190 B1	Mar. 22, 2005

Patrick Bajari and Ali Hortascu, *Auction Models When Bidders Make Small Mistakes: Consequences for Theory and Estimation*,” Stanford University and University of Chicago, 1-33 (2001) (hereinafter “Auction Models”).

The following rejections are before us for review:

1. Claims 1-2 and 10-11 are rejected under 35 U.S.C. § 103(a) as unpatentable over Lupien and Phillips.
2. Claims 3-6, 12-14, 18, and 21 are rejected under 35 U.S.C. § 103(a) as unpatentable over Lupien, Phillips, and Shoham.
3. Claims 8-9 and 17 are rejected under 35 U.S.C. § 103(a) as unpatentable over Lupien, Phillips, and Szabo.
4. Claim 16 is rejected under 35 U.S.C. § 103(a) as unpatentable over Lupien, Phillips, Shoham, and Szabo.
5. Claims 7 and 15 are rejected under 35 U.S.C. § 103(a) as unpatentable over Lupien, Phillips, Shoham, Szabo, and Auction Models.
6. Claims 19-20 and 22-23 are rejected under 35 U.S.C. § 103(a) as unpatentable over Lupien, Phillips, Shoham, and Seymour.

THE ISSUE

At issue is whether the Appellants have shown that the Examiner erred in making the aforementioned rejections.

This issue first turns on whether Lupien and Phillips disclose both 1) a structure extractor that estimates unknown elements of the market structure based in part on a bidding model and 2) a bidding behavior predictor that predicts bidding behaviors of bidders based on the estimated unknown elements of market structure. This issue turns second on whether it would have been obvious to combine the references of Lupien and Phillips.

FINDINGS OF FACT

We find the following enumerated findings of fact (FF) are supported at least by a preponderance of the evidence:²

FF1. Lupien discloses an automated system for managing large investor portfolios. The system monitors and analyzes a variety of factors which effect trading decisions in a vast number of securities. These factors include security trades, price and size quotations, and financial ratios (Abstract).

FF2. Lupien discloses that data files include security and identification data, variability, and cash flow (Col. 3:17-23).

FF3. Lupien discloses that the “Normal Price” is an estimate of the securities current price and an exponentially weighted average of recent trades and/or quotations adjusted for overall market movement (Col. 9:61-65).

FF4. Lupien does not disclose both 1) a structure extractor that estimates unknown elements of the market structure based in part on a bidding model and 2) a bidding behavior predictor that predicts bidding behaviors of bidders based on the estimated unknown elements of market structure.

² See *Ethicon, Inc. v. Quigg*, 849 F.2d 1422, 1427 (Fed. Cir. 1988) (explaining the general evidentiary standard for proceedings before the Patent Office).

FF5. Phillips discloses a combination forecasting method using predictions from a group of forecasters (Abstract).

FF6. Phillips discloses that one aspect of the invention is directed to conducting a contest that produces forecasting data for predesignated variables whose values change over time (Col. 6:38-40).

FF7. Phillips discloses that registration in the contest requires the participant to provide information regarding trading behavior, but does not disclose that a bidding model is used to predict this trading behavior (Col. 16:42-52).

FF8. Phillips discloses that an Interpolation Pricing Model may be used to provide forecasts for stocks (Col. 48:5-12).

PRINCIPLES OF LAW

“Section 103 forbids issuance of a patent when ‘the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.’” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations including (1) the scope and content of the prior art, (2) any differences between the claimed subject matter and the prior art, (3) the level of skill in the art, and (4) where in evidence, so-called secondary considerations. *Graham v. John Deere Co.*, 383 U.S. 1, 17-18 (1966). *See also KSR*, 550 U.S. at 407 (“While the sequence of these questions might be reordered in any particular case, the [*Graham*] factors continue to define the inquiry that controls.”)

In *KSR*, the Supreme Court emphasized “the need for caution in granting a patent based on the combination of elements found in the prior art,” *id.* at 415-16, and discussed circumstances in which a patent might be determined to be obvious. In particular, the Supreme Court emphasized that “the principles laid down in *Graham* reaffirmed the ‘functional approach’ of *Hotchkiss*, 11 How. 248.” *KSR*, 550 U.S. at 415 (citing *Graham*, 383 U.S. at 12), and reaffirmed principles based on its precedent that “[t]he combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results.” *Id.* at 416. The Court also stated “[i]f a person of ordinary skill can implement a predictable variation, § 103 likely bars its patentability.” *Id.* at 417. The operative question in this “functional approach” is thus “whether the improvement is more than the predictable use of prior art elements according to their established functions.” *Id.*

The Court noted that “[t]o facilitate review, this analysis should be made explicit.” *Id.* at 418 (citing *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006) (“[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness”). However, “the analysis need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ.” *Id.*

ANALYSIS

The Appellants argue that the rejection of claim 1 is improper because Lupien fails to disclose “a bidding model matching the extracted auction

characteristics data” (Br. 9). The Appellants argue that Lupien is not based on a bidding model but instead based on recent trades and/or quotations (Br. 10). The Appellants also argue that Lupien fails to disclose “a bidding behavior predictor that predicts bidding behaviors of bidders in the auction based on estimated unknown elements of market structure and characteristics of the auction” (Br. 12, Reply Br. 3-4). The Appellants also argue that there would have been no reason to combine the references of Lupien and Phillips (Reply Br. 4-5).

In contrast the Examiner has determined that Lupien discloses such a “bidding model” explicitly (Ans. 27-29). The Examiner also determined that such a “bidding model” in Lupien would be implicit since there would be no basis for making any assumptions without a model (Ans. 28). The Examiner states: “[p]ut most simplistically, anyone who participates in the auction process involved in the securities markets is engaging in the predicting of bidding behavior” and “[t]he prediction may be based on a whim, or an elaborate analysis. It is never the less an application of predicting bidding behavior by other “bidders” on the same security...” (Ans. 23).

We agree with the Appellants. Here, the Specification states that the term “market structure” means substantially the same as “auction environment.” Examples of “market structure” in the auction context are recited in the Specification as “environmental factors or conditions that may affect potential bidders in the actual bidding during the auction” (Spec. 9). Claim 1 requires:

a structure extractor that estimates unknown elements of market structure of the auction based on auction characteristics data extracted from historical auctions for similar items and a bidding model matching the extracted auction characteristics

data;

a bidding behavior predictor that predicts bidding behaviors of bidders in the auction based on the estimated unknown elements of market structure and characteristics of the auction;

(Emphasis added.)

Thus claim 1 requires both: 1) a structure extractor that estimates unknown elements of the market structure based in part on a bidding model, and 2) a bidding behavior predictor that predicts bidding behaviors of bidders based on the estimated unknown elements of market structure (which is based on the bidding model). Thus, the claim requires that the “bidding behavior predictor” must 1) predict bidding behaviors of bidders and 2) be based on a bidding model. The Examiner has determined that Lupien does disclose a bidding model as claimed (Ans. 28). The Examiner has also determined that a bidding model would be implicit in Lupien since there would be no basis for making any assumptions without a model (Ans. 28). However even if such a “bidding model” was implicit in Lupien, it could not also function as the separately claimed limitation of a “bidding behavior predictor.”

The Examiner also asserts that Phillips discloses methods for predicting trading behavior (Ans. 5). Phillips does disclose that an Interpolation Pricing Model may be used to provide forecasts for stocks (FF8). However it is unclear if this basic forecast in Phillips serves as a bidding behavior predictor that predicts bidding behaviors of bidders based on the estimated unknown elements of market structure (which is based on a bidding model). Regardless, even if Phillips does disclose such a “bidding behavior predictor” there is no articulated reasoning with rational underpinning for combining the references of Lupien and Phillips without

impermissible hindsight. Phillips is largely directed to the forecasting of stocks (FF7) in a contest (FF8) and Lupien is directed to an automated system for managing large investor portfolios (FF1) and there is insufficient articulated reasoning with rational underpinning to have a large investor portfolio combined with the specific elements from the stock forecasting contest as put forth in the rejection of record.

For the above reasons the rejection of claim 1 under 35 U.S.C. § 103(a) as unpatentable over Lupien and Phillips is not sustained. Claim 10 contains limitations similar to the ones addressed above and the rejection of this claim is not sustained for these same reasons. Claims 2-9 and 11-23 depend from claims 1 and 10 and the rejection of these claims is not sustained for the same reasons given above.

CONCLUSIONS OF LAW

We conclude that Appellants have shown that the Examiner erred in rejecting claims 1-2 and 10-11 under 35 U.S.C. § 103(a) as unpatentable over Lupien and Phillips.

We conclude that Appellants have shown that the Examiner erred in rejecting claims 3-6, 12-14, 18, and 21 under 35 U.S.C. § 103(a) as unpatentable over Lupien, Phillips, and Shoham.

We conclude that Appellants have shown that the Examiner erred in rejecting claims 8-9 and 17 under 35 U.S.C. § 103(a) as unpatentable over Lupien, Phillips, and Szabo.

We conclude that Appellants have shown that the Examiner erred in rejecting claim 16 under 35 U.S.C. § 103(a) as unpatentable over Lupien, Phillips, Shoham, and Szabo.

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We conclude that Appellants have shown that the Examiner erred in rejecting claims 7 and 15 under 35 U.S.C. § 103(a) as unpatentable over Lupien, Phillips, Shoham, Szabo, and Auction Models.

We conclude that Appellants have shown that the Examiner erred in rejecting claims 19-20 and 22-23 under 35 U.S.C. § 103(a) as unpatentable over Lupien, Phillips, Shoham, and Seymour.

DECISION

The Examiner's rejection of claims 1-23 is reversed.

REVERSED

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